

it was surmised that these periodic¹ movements upon the earth were related to mutations occurring in the sun upon which all the modifications of the earth's energy essentially depend, it is only in comparatively recent times that some distinct approach has been successful in detecting the approximate quantitative as well as qualitative connection of these changes. A recognition of cyclical² or circle-like variations in all material and human events was, under the conception of the uniformity of the processes of nature, ready to be extended to occurrences which failed to present any very obvious appearance of being embraced within the general law of regularity of recurrent change. It had been gradually ascertained that all motion in nature assumes a rhythmical character, a movement or swing to and fro, or up and down, or to right and left in alternate and continuous sequence and return: a repeated succession of opposite states. This doctrine in its general form was first enforced by Mr. Herbert Spencer. Flags under the pressure of a breeze undulate from end to end; blades of grass exhibit tremulous risings and fallings of position; the courses carved out by rivers invariably assume the shape of serpentine curves; the heart throbs in measured movements ; each sonorous pulse of air is simply a motion of compression and dilatation, while the rays of light and heat, and all electrical manifestations, are but alternate vertical undulations in the ocean of ether. But, besides this simple rhythmical form, we perceive a combination of rhythms where an object or occurrence revolves through larger and more varied alternating courses, which are repeated in regular order within succeeding periods of approximately equal length; each phase or appearance forming a fixed point in a reentrant curve along which the object or occurrence perpetually moves. This conception of a cycle in human experience was known in a general way to Sir William Petty, the economist, who in 1662

¹ Greek *irfptotios*, a way round ; *irepi*, round, and 65<k, a way ; the time of a circuit.

² Greek *κῶλος*, a ring : then applied to any circular motion, orbit, or revolution. The descriptive use of the term in commercial and financial events indicates their recurrent nature in approximately regular succession of repetition within a closely defined period of time.